

應用類神經網路於多感測器資料融合

莊登吉、鍾翼能；陳雍宗

E-mail: 9802576@mail.dyu.edu.tw

摘要

在日新月異的航空及國防技術，由於目標物的性能速度，數目及變異性等皆較以往進步許多，為因應日益復雜的目標追蹤環境，雷達追蹤系統的性能必須同步提昇，才能達到洞燭先機，決戰千里之外的最高戰術目的。在目標的追蹤上，追蹤多個目標時比較複雜，也會常常造成感測器判斷上的錯誤，或者造成追蹤上極大的誤差，用單一個偵測器來做雷達目標的追蹤偵測時，會因掃描區域太大，造成偵測上的疏失、甚至失去追蹤的目標。同時追蹤多個目標時情況更加複雜，這時若使用「動態偵測器」來偵測目標的相關數據，可使追蹤目標的誤差變小，增加追蹤的成功率。本研究提出一新的追蹤方法，即應用競爭性類神經網路(CHNN)之運算架構於雷達目標追蹤，此運算將可有效且最佳化地決定雷達量測值與軌道間的關聯性，進而準確估算目標物目前的位置及其他資訊，同時結合擴展型多模預估器架構，更可同時解決目標物變速的問題，進而降低追蹤的誤差及錯誤率。本研究計畫主要是探討多偵測器系統的估測方法，並處理和目標追蹤的相關問題，本論文將比較不同的追蹤理論，進而改善追蹤上的問題。

關鍵詞：多目標追蹤系統、競爭性類神經網路、擴展型多模預估器架構、多偵測器資料融合

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